# Indiana K-12 Computer Science Standards Alignment with CodeX Curriculum

| | Unit 1 | Unit 2 | Unit 3 |
|---|---|---|---|
| **Data and Information (DI)** | | | |
| 6-8.DI.1 Use the basic steps in algorithmic problem-solving to design solutions (e.g., problem statement and exploration, examination of sample instances, design, implementing a solution, testing, and evaluation). | | [1] | |
| 6-8.DI.2 Describe the process of parallelization as it relates to problem solving. | | | |
| 6-8.DI.3 Represent data in a variety of ways (e.g., text, sounds, pictures, and numbers), and use different visual representations of problems, structures, and data (e.g., graphs, charts, network diagrams, flowcharts). | | | |
| 6-8.DI.4 Understand the notion of hierarchy and abstraction in computing including highlevel languages, translation, instruction set, and logic circuits. | | | |
| 6-8.DI.5 Demonstrate interdisciplinary applications of computational thinking and interact with content-specific models and simulations to support learning and research. | | | |
| **Computing Devices and Systems (CD)** | | | |
| 6-8.CD.1 Demonstrate an understanding of the relationship between hardware and software. | [2] | | |
| 6-8.CD.2 Apply troubleshooting strategies to identify and solve routine hardware and software problems that occur during everyday computer use. | [3] | | |
| 6-8.CD.3 Describe the major components and functions of computer systems and network. | | | |
| 6-8.CD.4 Describe what distinguishes humans from machines focusing on human intelligence versus machine intelligence and ways we can communicate, as well as ways in which computers use models of intelligent behavior (e.g., robot motion, speech and language understanding, and computer vision). | | | |
| **Programs and Algorithms (PA)** | | | |
| 6-8.PA.1 Select appropriate tools and technology resources to support learning and personal productivity, publish individual products, and design, develop, and publish data, accomplish a variety of tasks, and solve problems. | [4] | | |
| 6-8.PA.2 Implement problem solutions using a programming language that includes looping behavior, conditional statements, logic, expressions, variables, and functions. | [5] | | |
| 6-8.PA.3 Demonstrate dispositions amenable to open-ended problem solving and programming (e.g., comfort with complexity, persistence, brainstorming, adaptability, patience, propensity to tinker, creativity, accepting challenge). | | | |
| **Networking and Communication (NC)** | | | |
| 6-8.NC.1 Collaboratively design, develop, publish, and present products (e.g., videos, podcasts, websites) using technology resources that demonstrate and communicate curriculum concepts. | | | |
| 6-8.NC.2 Exhibit dispositions necessary for collaboration: providing useful feedback, integrating feedback, understanding and accepting multiple perspectives, socialization. | | | |
| **Impact and Culture (IC)** | | | |
| 6-8.IC.1 Exhibit legal and ethical behaviors when using technology and information and discuss the consequences of misuse. | | | |
| 6-8.IC.2 Analyze the positive and negative impacts of technology on one's personal life, society, and our culture. | | | |
| 6-8.IC.3 Evaluate the accuracy, relevance, appropriateness, comprehensiveness, and biases that occur in electronic information sources. | | | |
| 6-8.IC.4 Describe ethical issues that relate to computers and networks (e.g., security, privacy, ownership, and information sharing), and discuss how unequal distribution of technological resources in a global economy raises issues of equity, access, and power. | | | |

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| **Data and Information (DI)** | | | |
| ICS-2.1 Use the design process to iteratively develop a computing artifact. | | [6] | |
| ICS-2.3 Understand how abstractions hide implementation details when used in everyday objects. | | | |
| ICS-2.4 Use abstraction to manage program complexity (such as a function to create recallable code). | [7] | | |
| ICS-2.5 Formulate algorithms using programming structures to decompose a complex problem. | | [8] | |
| ICS-3.1 Understand how computers represent data, including text, sound, images, and numbers. | | | |
| ICS-3.2 Create data visualizations, models, and simulations | | | |
| ICS-3.3 Evaluate data to better understand the world. | | | |
| ICS-3.4 Explore the relationship between information and data. | | | |
| ICS-5.3 Utilize a problem solving approach to develop a solution using technology. | [9] | | |
| **Computing Devices and Systems (CD)** | | | |
| ICS-2.6 Assess a program by testing to verify correct behavior. | | | |
| ICS-4.1 Demonstrate understanding of the hardware and operating systems of computers. | | | |
| ICS-4.3 Explore the fundamental principles and components of computer networking. | | | |
| ICS-4.5 Investigate the use of artificial intelligence by individuals and society. | | | |
| ICS-4.6 Investigate innovations in computing, including robotics. | | | |
| **Programs and Algorithms (PA)** | | | |
| ICS-2.2 Demonstrate competencies of programming constructs, including: use of data types and variables, control structures (sequencing, looping, branching), and modularity (such as a function). | [10] | | |
| ICS-2.7 Construct a computing artifact that has a user interface. | [11] | | |
| ICS-2.8 Produce an artifact that includes rich media. | | | |
| ICS-2.9 Illustrate knowledge of good programming practice including the use of conventional standards and comment. | [12] | | |
| ICS-5.5 Program a solution to a problem using pair programming or other methods. | | | |
| **Networking and Communication (NC)** | | | |
| ICS-5.1 Design a solution to a problem by working in a team. | | | |
| ICS-5.2 Explore technologies that can be used to collaborate with others of various cultures and career fields. | | | |
| ICS-5.4 Analyze the work of peers and provide feedback. | | | |
| **Impact and Culture (IC)** | | | |
| ICS-1.1 Create a definition of computer science and computational thinking. | | | |
| ICS-1.2 Summarize ethical issues within computer science. | | | |
| ICS-1.3 Investigate trends in computer science and their impact on society. | | | |
| ICS-1.4 Summarize ethical issues within computer science. | | | |
| ICS-4.2 Discuss the ethical and appropriate use of computer devices. | | | |
| ICS-4.4 Examine the impact of the Internet on society. | | | |
| ICS-6.1 Examine the dynamic between privacy and security. | | | |
| ICS-6.2 Explain the privacy concerns related to the collection and generation of data through implicit and explicit processes. | | | |
| ICS-6.3 Evaluate the social and emotional implications of privacy in the context of safety, law, and ethics. | | | |
| ICS-6.4 Give examples to illustrate how sensitive data can be affected by malware and other attacks | | | |
| ICS-6.5 Recommend security measures to address various scenarios based on factors such as efficiency, feasibility, and ethical implications. | | | |
| ICS-6.6 Discuss the laws surrounding intellectual property. | | | |
| ICS-7.1 Identify computer science occupations and the roles and responsibilities of each. | | | |
| ICS-7.2 Report job outlook, demand, and projected wages for computer science careers. | | | |
| ICS-7.3 Explore the job opportunities that are available in computer science. | | | |
| ICS-7.4 Investigate post-secondary training opportunities and industry certifications that are available. | | | |

[1] Remixes with their documentations of flowcharts and pseudocodes cover this

[2] Mission 2 begins the introduction of this as well as any time a new sensor is introduced

[3] Code Tracing Charts and the debugger accomplish this

[4] The remixes accomplish this

[5] Mission 3 begins the use of variables
Mission 4 begins the use of conditional statements, functions and loops
Mission 6 uses equations

[6] Remixes do this

[7] Mission 4: Function use is introduced

[8] Mission 7 begins to introduce algorithms but does not explain this

[9] Remixes do this and begin in Mission 4

[10] Mission 3 introduces variables
Mission 4 introduces data types, and control structures as well as the use of modularity

[11] The CodeX screen is a user interface

[12] 5.5 Comments are introduced